

1 The opinion in support of the decision being entered  
2 today is *not* binding precedent of the Board.  
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5 UNITED STATES PATENT AND TRADEMARK OFFICE  
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8 BEFORE THE BOARD OF PATENT APPEALS  
9 AND INTERFERENCES  
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12 *Ex parte* MYRON J. MAURER, GAVIN D. VOGEL, EUGENIO TOCCALINO,  
13 LAXMAN P. KATAKKAR, PRASHANT S. SHEMAKAR,  
14 and SRINIVASAN VELUSAMY  
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17 Appeal No. 2007-0269  
18 Application No. 10/799,095  
19 Technology Center 3600  
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22 Decided: September 27, 2007  
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25 Before WILLIAM F. PATE, III, JENNIFER D. BAHR, and DAVID B.  
26 WALKER, *Administrative Patent Judges*.

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28 PATE, III, *Administrative Patent Judge*.  
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31 DECISION ON APPEAL  
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33 STATEMENT OF THE CASE  
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1 This is an appeal from the final rejection of claims 1, 3-5, 9, 17<sup>1</sup>, 18, 24-29,  
2 32 and 33 and the Examiner's refusal to allow claims 6-8, 10, 13-16 and 19-23 as  
3 amended after final rejection. These are the only claims remaining in the  
4 application. We have jurisdiction under 35 U.S.C. §§ 134 and 6.

5 The claimed invention is an impact absorbing structure comprising two or  
6 more extruded plastic layers connected with a hinge and nested together. In some  
7 independent claims, the layers have different properties with regard to structure or  
8 composition, and the hinge feature is not claimed. A method of manufacture is  
9 also claimed.

10 Claim 1, reproduced below, is further illustrative of the claimed subject  
11 matter.

12 1. An article of manufacture, comprising:

13 An energy absorber comprising an extruded plastic first layer having a  
14 first plurality of corrugations separated by a hinge from a second plurality of  
15 corrugations, wherein the length of the corrugations are longer than their  
16 widest cross-sectional width.  
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18 The references of record relied upon by the Examiner as evidence of  
19 obviousness are:

20 Brockenbrough	US 4,852,704	Aug. 1, 1989
21 Welygan	US 5,011,642	Apr. 30, 1991

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23 Claims 1, 3-10, 13-29, 32 and 33 stand rejected under 35 U.S.C. § 103 as  
24 unpatentable over Brockenbrough in view of Welygan.  
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<sup>1</sup> Appellants at page 1 of the Brief acknowledge that claim 17 depends from  
canceled claim 12. Claim 17 should depend from independent claim 10.

ISSUE

We note that independent claims 10, 18 and 24 are not expressly argued or even mentioned in the Brief and Reply Brief. However, dependent claims 15, 16, and 17 which depend from claim 10, dependent claims 19 and 20 which depend from claim 18, and dependent claim 28 which depends from claim 24 are expressly argued. Accordingly, we will construe these arguments as maintaining the appeal as to the independent claims 10, 18, and 24 and will consider the patentability thereof hereinbelow.

The sole issue for our consideration in this appeal is whether Appellants have established that the Examiner erred in rejecting claims 1, 3-10, 13-29, 32 and 33 on the ground of obviousness.

FINDINGS OF FACT

Brockenbrough discloses an energy absorption barrier device for automotive vehicles, and in particular, an intrusion barrier for the door of such vehicles. (Brockenbrough, col. 1, ll. 6-10). The invention is comprised of a plurality of elongated sheet metal strips mounted in stacked relation and having sinusoidal shapes. (Brockenbrough, col. 2, ll. 13-15). The ends of the strips are held together by end bracket 17, 18. (Brockenbrough, col. 3, ll. 35-36). Preferably a layer of acrylic modified epoxy is provided between the ends of the adjacent strips within the brackets. The composition of the strips is high strength steel treated so as to have 60 ksi specified minimum yield strength and 20% specified minimum elongation. (Brockenbrough, col. 3, ll. 25-27).

Welygan teaches a method for making a three-dimensional plastic article having a base element and at least one undulating tapered rib element. The rib element is attached to the base element along its entire length. The article may have multiple tapered rib elements and may also have secondary structures

1 attached to the rib or the base. (Welygan, col. 2, ll. 24-30). The embodiment of  
2 Fig. 7, for instance, shows undulating ribs of a sinusoidal pattern where the ribs  
3 undulate in phase with one another. The structure of Welygan is extruded, and the  
4 structure can be made of many thermoplastics, rubbers, thermosetting plastic  
5 materials, natural substances, or even foodstuffs. (Welygan, col. 3, ll. 15-50). The  
6 structure of Welygan is suitable for use as packing or as an energy absorbing  
7 material among other uses. (Welygan, col. 10, ll. 35-36).

#### 8 9 PRINCIPLES OF LAW

10 “Section 103 forbids issuance of a patent when ‘the differences between the  
11 subject matter sought to be patented and the prior art are such that the subject  
12 matter as a whole would have been obvious at the time the invention was made to a  
13 person having ordinary skill in the art to which said subject matter pertains.’” *KSR*  
14 *Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007).  
15 The question of obviousness is resolved on the basis of underlying factual  
16 determinations including (1) the scope and content of the prior art, (2) any  
17 differences between the claimed subject matter and the prior art, and (3) the level  
18 of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459,  
19 467 (1966). *See also KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 (“While the  
20 sequence of these questions might be reordered in any particular case, the  
21 [*Graham*] factors continue to define the inquiry that controls.”) The Court in  
22 *Graham* further noted that evidence of secondary considerations “might be utilized  
23 to give light to the circumstances surrounding the origin of the subject matter  
24 sought to be patented.” 383 U.S. at 18, 148 USPQ at 467.

25 In *KSR*, the Supreme Court emphasized “the need for caution in granting a  
26 patent based on the combination of elements found in the prior art,” *id.* at 1739,

82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious.

In particular, the Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *KSR*, 127 S.Ct. at 1739, 82 USPQ2d at 1395 (citing *Graham*, 383 U.S. at 12, 148 USPQ at 464 (emphasis added)), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

*Id.* at 1740, 82 USPQ2d at 1396. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.”

## ANALYSIS

Appellants argue that it would not have been obvious to fabricate the strips of Brockenbrough of extruded plastic. Appellants make this point on page 8 of the

1 Reply Brief<sup>2</sup>. We agree. In our view, it would not have been obvious to one of  
2 ordinary skill to have used plastic in the invention of Brockenbrough. The  
3 Examiner states as a possible motivation providing less expensive, lighter, and  
4 easier to manufacture material for the energy absorber. However, Brockenbrough  
5 is very specific about the requirement for a high strength steel with specific  
6 minimum yield strength and minimum elongation (Brockenbrough, col. 3, ll. 26-  
7 27). It is unclear from the Welygan patent whether plastic would be suitable in  
8 providing the requisite yield strength and ductility necessary in the side guard  
9 beam in a vehicle door. There is no reasonable expectation of success that any of  
10 the plastic or extrudable materials disclosed in Welygan could perform the function  
11 of a high strength steel beam in Brockenbrough. The results of substituting plastic  
12 for the steel beams would not have been predictable, nor is this a matter of a simple  
13 substitution of one known substance for another that yields predictable results.

14 Additionally, it appears that the sizes of the rib extrusions in Welygan,  
15 which are listed as up to 26 mm, is another indication that the materials of  
16 Welygan would not be suitable as a door guard beam. (Welygan col. 8, l. 5). A rib  
17 extrusion that can only be made up to 26 mm is apparently too small. There is no  
18 indication in Welygan that these ribs could be scaled-up or the extrusion process

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<sup>2</sup> Appellants make this argument in a section of the Reply Brief entitled “Differing Compositions.” It is unclear whether this argument is meant to apply only to claims 9, 17, and 23, and the claims that depend therefrom, or to all claims on appeal. At some portions of page 8, Appellants appear to be applying this argument to all the appealed claims. In spite of this lack of clarity on the part of the Appellants, we will treat this argument as an argument respecting all the appealed claims.

1 would even work for larger ribs. The ribs of Brockenbrough are 3 inches wide.  
2 (Brockenbrough, col. 3, l. 24).

3 Turning to the specific claims, we do not credit the Examiner's argument  
4 that the end brackets 17, 18 can be regarded as a hinge (Answer 4-5), as called for  
5 in claims 1, 28, and 29. It is clear that the structure is a clamp fixedly holding the  
6 ends of the strips together.

7 With respect to argued claims 9, 17, and 23, which require layers of plastic  
8 that differ in structure or composition, we credit the argument of the Appellant that  
9 Welygan does not disclose multiple layers of extruded plastic. The Examiner  
10 argues that the use of differing compositions is taught by Brockenbrough itself.  
11 (Brockenbrough, col. 5, l. 49). While it may be true that Brockenbrough discloses  
12 differing compositions, there is no indication that plastic is contemplated for any of  
13 the strips of Brockenbrough, let alone layers of plastic differing in composition.  
14 We do agree with the Examiner that Brockenbrough discloses layers of different  
15 structure (Brockenbrough col. 3, ll. 28-31), but it would not have been obvious to  
16 make these strips of differing structure of extruded plastic.

17 With respect to the argued claims 7, 15, and 21 directed to friction to  
18 dissipate impact energy, we agree with Appellant that Brockenbrough is silent with  
19 respect to frictional force as a means to dissipate impact energy. The Examiner's  
20 reliance on frictional forces between the corrugations of Brockenbrough as the  
21 beam collapses is apparently speculation.

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CONCLUSION

The rejection of claims 1, 3-10, 13-29, 32 and 33 is reversed.

REVERSED

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